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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/851,242	05/08/2001	Charles J. Runkle	2000.16	4003

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EXAMINER

STAIKOVICI, STEFAN

ART UNIT	PAPER NUMBER
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1732

6

DATE MAILED: 09/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

49-6

Office Action Summary

Application No.	Applicant(s)	
09/851,242	RUNKLE ET AL.	
Examiner	Art Unit	
Stefan Staicovici	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 6-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-15 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 May 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

- ✓ 1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
- I. Claims 1-5, drawn to a process of making a hollow fiber membrane contactor, classified in class 264, subclass 243.
 - II. Claims 6-15, drawn to a hollow fiber membrane contactor, classified in class 428, subclass 36.2.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions Group I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by another and materially different process such as, directly bonding the wound hollow fiber fabric to the tube and the structure to the casing without the use of the additional first and a second potting material.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Mr. Robert H. Hammer, III on August 1, 2002 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-5. Affirmation of this election must be made by applicant in replying to this Office action. Claims

6-15 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

✓ 6. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested: "Method for Making a Hollow Fiber Membrane Contactor."

Drawings

✓ 7. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: ports "74" (see page 10, line 22). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Mancusi *et al.* (US Patent No. 5,186,832).

Mancusi *et al.* ('832) teach the claimed process of making a hollow fiber membrane separation device (contactor) including, providing a core, wrapping a hollow fiber fabric onto said core, potting the fabric and the core together to form an assembly, placing the assembly in a housing (shell) and potting the assembly and the housing interior to form a cartridge (see col. 8, lines 44-48, col. 9, lines 1-7 and 60-68 and col. 9, lines 41-60). Further, it should be noted that Mancusi *et al.* ('832) specifically teach potting of the tube-sheets to the interior of the housing (see col. 9, lines 22-27). Furthermore, Mancusi *et al.* ('832) teach that the potting between the fabric and the core occurs by putting down continuous resinous potting material lines (bead-potting) (see col. 10, lines 45-50).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mancusi *et al.* (US Patent No. 5,186,832) in view of Bikson *et al.* (US Patent No. 4,800,019).

Mancusi *et al.* ('832) teach the basic claimed process as described above.

Regarding claim 3, Mancusi *et al.* ('832) does not teach mold-potting. Bikson *et al.* ('019) teach a process for forming a hollow fiber membrane contactor including, providing a mold, inserting the ends of a plurality of hollow fiber bundles into the mold and injecting a resinous material into the mold to form tubesheets that are integral with the housing. Therefore, it would have been obvious for one of ordinary skill in the art to have used mold potting as an alternative to gravity or centrifugal potting as taught by Bikson *et al.* ('019) in the process of Mancusi *et al.* ('832) because, Bikson *et al.* ('019) teach that mold potting is one of many procedures available to one ordinarily skilled in the art and also because, both references teach similar products and processes and solve the similar problem of potting in a process of making a hollow fiber membrane separation device (contactor).

In regard to claims 4 and 5, Mancusi *et al.* ('832) does not teach a step of heat-treatment, specifically a first and a second heat-treatment. Bikson *et al.* ('019) teach a process for forming a hollow fiber membrane contactor including, a first step of heat-treating to cure the potting resin and then a second step of heat treatment (see col. 4, line 60 through col. 5, line 7). Therefore, it would have been obvious for one of ordinary skill in the art to have heat-treated the hollow fiber membrane contactor as taught by Bikson *et al.* ('019) in the process of Mancusi *et al.* ('832)

because, Bikson *et al.* ('019) specifically teach that a two-step heat treatment process provides for an increased density of the porous walls of the hollow fibers, hence providing for an improved product (see col. 3, lines 27-42) also because, both references teach similar end-products.

12. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang *et al.* (US Patent No. 5,284,584) in view of Mancusi *et al.* (US Patent No. 5,186,832) or Caskey *et al.* (US Patent No. 4,961,760).

Huang *et al.* ('584) teach the basic claimed process for making a hollow fiber membrane separation device (contactor) including, providing a core, wrapping a hollow fiber fabric onto said core and potting the fabric and the core together to form an assembly (see col. 15, line 57 through col. 16, line 26). Further, Huang *et al.* ('584) teach bead-potting (see Figure 1).

Regarding claims 1 and 2, Huang *et al.* ('584) do not teach forming a cartridge. Mancusi *et al.* ('832) teach a process for making a hollow fiber membrane separation device (contactor) including, providing a core, wrapping a hollow fiber fabric onto said core, potting the fabric and the core together to form an assembly, placing the assembly in a housing (shell) and potting the assembly and the housing interior to form a cartridge (see col. 8, lines 44-48, col. 9, lines 1-7 and 60-68 and col. 9, lines 41-60). Further, it should be noted that Mancusi *et al.* ('832) specifically teach potting of the tubesheets to the interior of the housing (see col. 9, lines 22-27). Furthermore, Mancusi *et al.* ('832) teach that the potting between the fabric and the core occurs by putting down continuous resinous potting material lines (bead-potting) (see col. 10, lines 45-50). Caskey *et al.* ('760) teach a process for making a hollow fiber membrane separation device

(contactor) including, inserting hollow fiber membrane into a casing and potting the hollow fiber membrane and the casing using an adhesive (see col. 9, lines 40-47). Therefore, it would have been obvious for one of ordinary skill to have inserted a hollow fiber membrane device into a casing and potted said hollow fiber membrane device to said casing as taught by Mancusi *et al.* ('832) or Caskey *et al.* ('760) in the process of Huang *et al.* ('584) because, Huang *et al.* ('584) specifically teach a hollow fiber membrane fabric used in separation devices, whereas Mancusi *et al.* ('832) or Caskey *et al.* ('760) teach hollow fiber membrane separation devices and as such, the hollow fiber membrane fabric of Huang *et al.* ('584) requires to be inserted into a casing and potted to said casing as taught by Mancusi *et al.* ('832) or Caskey *et al.* ('760) in order to function as described.

13. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang *et al.* (US Patent No. 5,284,584) in view of Mancusi *et al.* (US Patent No. 5,186,832) or Caskey *et al.* (US Patent No. 4,961,760) and in further view of Bikson *et al.* (US Patent No. 4,800,019).

Huang *et al.* ('584) in view of Mancusi *et al.* ('832) or Caskey *et al.* ('760) teach the basic claimed process as described above.

Regarding claim 3, Huang *et al.* ('584) in view of Mancusi *et al.* ('832) or Caskey *et al.* ('760) do not teach mold-potting. Bikson *et al.* ('019) teach a process for forming a hollow fiber membrane contactor including, providing a mold, inserting the ends of a plurality of hollow fiber bundles into the mold and injecting a resinous material into the mold to form tube-sheets that are integral with the housing. Therefore, it would have been obvious for one of ordinary skill in the art to have used mold potting as an alternative to gravity or centrifugal potting as taught by

Bikson *et al.* ('019) in the process of Huang *et al.* ('584) in view of Mancusi *et al.* ('832) or Caskey *et al.* ('760) because, Bikson *et al.* ('019) teach that mold potting is one of many procedures available to one ordinarily skilled in the art and also because, both references teach similar products and processes and solve the similar problem of potting in a process of making a hollow fiber membrane separation device (contactor).

In regard to claims 4 and 5, Huang *et al.* ('584) in view of Mancusi *et al.* ('832) or Caskey *et al.* ('760) do not teach a step of heat-treatment, specifically a first and a second heat-treatment. Bikson *et al.* ('019) teach a process for forming a hollow fiber membrane contactor including, a first step of heat-treating to cure the potting resin and then a second step of heat treatment (see col. 4, line 60 through col. 5, line 7). Therefore, it would have been obvious for one of ordinary skill in the art to have heat-treated the hollow fiber membrane contactor as taught by Bikson *et al.* ('019) in the process of Huang *et al.* ('584) in view of Mancusi *et al.* ('832) or Caskey *et al.* ('760) because, Bikson *et al.* ('019) specifically teach that a two-step heat treatment process provides for increased density of the porous walls of the hollow fibers, hence providing for an improved product (see col. 3, lines 27-42) also because, both references teach similar end-products.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 1732

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Staicovici, Ph.D. whose telephone number is (703) 305-0396. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM and alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jan H. Silbaugh, can be reached at (703) 308-3829. The fax phone number for this Group is (703) 305-7718.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Stefan Staicovici, PhD


AU 1732 8/31/02

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August 31, 2002